Reagent Regenerative Microgravity Compatible Inorganic Ion Analyzer, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

There is limited capability for water quality analysis onboard current spacecraft. Several hardware failures have occurred onboard ISS which demonstrate the need for measurement of inorganic contaminants. Monitoring capability is of interest for identification and quantification of inorganic species in potable water, thermal control system cooling water, and human wastewater. Needed attributes for such multi-ion analyzers to be used in NASA manned space exploration missions include: minimal sample preparation, use of small sample volumes, little or no need for reagent resupply, instrument of minimum size and weight, high sensitivity, accuracy and reliability, in situ calibration, and operation in microgravity and partial gravity. Lynntech proposes to develop a reagent-regenerative, microgravity-compatible, compact-sized ion analyzer, which has desirable attributes of no sample preparation, low weight, small volume, high sensitivity, no reagent resupply, and operation in microgravity and partial gravity, which will impact the reduction of its equivalent system mass. In the Phase I Lynntech will demonstrate the feasibility of the proposed approach with a breadboard system. An automated prototype will be delivered to NASA during Phase II.

Primary U.S. Work Locations and Key Partners

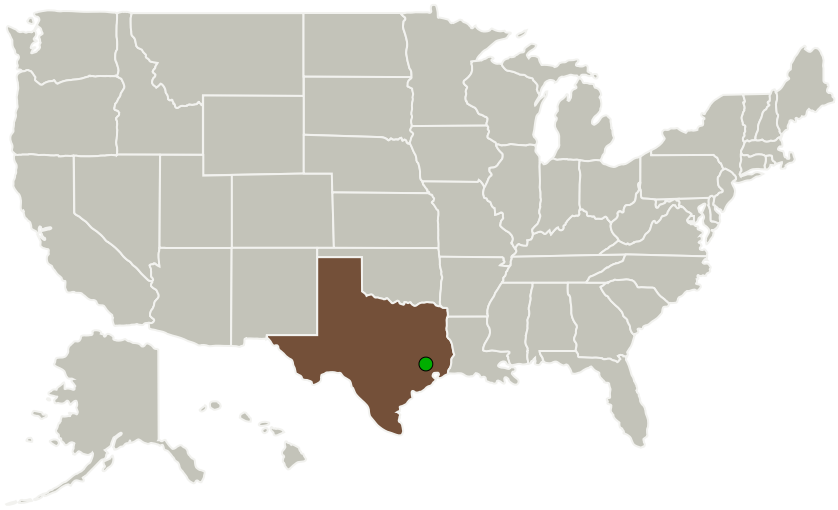

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Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Lynntech, Inc.	Lead Organization	Industry	College Station, Texas
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations
Texas

Project Transitions

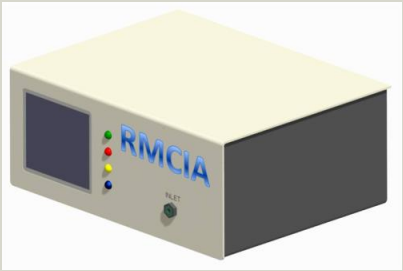
June 2015: Project Start

December 2015: Closed out

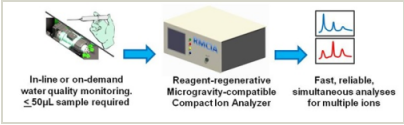
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139388)*

Images



Briefing Chart
Reagent regenerative microgravity compatible inorganic ion analyzer Briefing Chart *(https://techport.nasa.gov/image/132900)*



Final Summary Chart Image
Reagent regenerative microgravity compatible inorganic ion analyzer, Phase I Project Image *(https://techport.nasa.gov/image/126505)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Lynntech, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

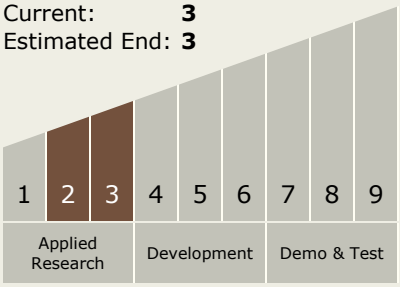
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jinseong Kim

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Completed Technology Project (2015 - 2015)

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.4 Environmental Monitoring, Safety, and Emergency Response
    - TX06.4.1 Sensors: Air, Water, Microbial, and Acoustic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System